
Multifunctional materials through modular protein engineering.

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Public Summary:

The diversity of potential applications for protein-engineered materials has undergone profound recent expansion through a rapid increase in the library of domains that have been utilized in these materials. Historically, protein-engineered biomaterials have been generated from a handful of peptides that were selected and exploited for their naturally evolved functionalities. In recent years, the scope of the field has drastically expanded to include peptide domains that were designed through computational modeling, identified through high-throughput screening, or repurposed from wild type domains to perform functions distinct from their primary native applications. The strategy of exploiting a diverse library of peptide domains to design modular block copolymers enables the synthesis of multifunctional protein-engineered materials with a range of customizable properties and activities. As the diversity of peptide domains utilized in modular protein engineering continues to expand, a tremendous and ever-growing combinatorial expanse of material functionalities will result.

Scientific Abstract:

The diversity of potential applications for protein-engineered materials has undergone profound recent expansion through a rapid increase in the library of domains that have been utilized in these materials. Historically, protein-engineered biomaterials have been generated from a handful of peptides that were selected and exploited for their naturally evolved functionalities. In recent years, the scope of the field has drastically expanded to include peptide domains that were designed through computational modeling, identified through high-throughput screening, or repurposed from wild type domains to perform functions distinct from their primary native applications. The strategy of exploiting a diverse library of peptide domains to design modular block copolymers enables the synthesis of multifunctional protein-engineered materials with a range of customizable properties and activities. As the diversity of peptide domains utilized in modular protein engineering continues to expand, a tremendous and ever-growing combinatorial expanse of material functionalities will result.

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